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WHAT IS CLAIMED IS:

- 1. A magnetic random access memory module comprising:
 - a magnetic memory array;
- a permeable metal layer extending over a first side of the magnetic memory array; and

an electrically insulating layer disposed between the magnetic memory array and the permeable metal layer.

- 2. The memory module of claim 1, wherein the permeable metal layer comprises a soft magnetic material.
- 3. The memory module of claim 2, wherein soft magnetic material is selected from the group consisting of iron, nickel, cobalt, alloys of iron, alloys of nickel and alloys of cobalt.
- 4. The memory module of claim 1, wherein the permeable metal layer has a permeability of greater than 10.
- 5. The memory module of claim 1, wherein the permeable metal layer has an anisotropy of less than 100 Oe.
- 6. The memory module of claim 1, wherein the permeable metal layer is isotropic.
- 7. The memory module of claim 1, wherein the magnetic memory array comprises:
 - a plurality of magnetic memory cells; and
- a pair of write conductors operatively positioned adjacent each of the plurality of magnetic memory cells.

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8. The memory module of claim 7, wherein each of the plurality of magnetic memory cells comprises:

a reference layer having a pinned magnetization;

- a sense layer having an alterable magnetization; and
- a dielectric layer separating the reference layer and the sense layer.
- 9. The memory module of claim 1, wherein the permeable metal layer has an area larger than an area of the magnetic memory array.
- 10. The memory module of claim 9, wherein the area of the permeable metal layer is at least twice the area of the magnetic memory array.
- 11. The memory module of claim 7, wherein the spacing between the permeable metal layer and the plurality of memory cells is 10 microns or less.
- 12. The memory module of claim 1, wherein the permeable metal layer has an annealing temperature lower than an annealing temperature of the magnetic memory array.
- 13. A method for shielding a magnetic random access memory module from stray magnetic fields, comprising:

attaching a layer of electrically insulating material adjacent a magnetic memory array in the memory module; and

attaching a layer of permeable metal over the insulating material.

- 14. The method of claim 13, wherein attaching a layer of permeable metal over the insulating material comprises sputtering the permeable metal in a rotating magnetic field.
- 15. The method of claim 13, wherein attaching a layer of permeable metal over the insulating material comprises:

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sputtering the permeable metal; and annealing the sputtered permeable metal in a rotating magnetic field.

- 16. The method of claim 15, wherein annealing the sputtered permeable metal in a rotating magnetic field comprises annealing the sputtered permeable metal while rotating the memory module in an annealing station in the presence of a stationary magnetic field.
- 17. The method of claim 15, wherein annealing the sputtered permeable metal in a rotating magnetic field comprises annealing the sputtered permeable metal while rotating a permanent magnet in an annealing station.
- 18. The method of claim 15, wherein annealing the sputtered permeable metal includes annealing the permeable metal at a temperature that is lower than an annealing temperature of a magnetic material in the memory module.
- 19. The method of claim 13, wherein attaching a layer of isotropic permeable metal comprises adhesively securing a sheet of high permeability metal to the insulating layer.
- 20. The method of claim 19, wherein the insulating layer is an adhesive.
- 21. A magnetic random access memory module comprising: a plurality of magnetic memory cells;
- a plurality of write conductors, each of the write conductors positioned adjacent an associated one of the plurality of magnetic memory cells;

an isotropic magnetically permeable metal layer extending continuously over at least one side of the magnetic memory cells and associated write conductors; and

an electrically insulating layer disposed between the permeable metal layer and the write conductors.

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22. A method for shielding a magnetic random access memory module from stray magnetic fields, the method comprising:

depositing a layer of electrically insulating material over a surface of a magnetic memory array;

sputtering a layer of permeable metal layer over the layer of electrically insulating material such that the permeable metal layer extends continuously over the magnetic memory array;

annealing the sputtered layer of permeable metal to make the layer of permeable metal isotropic.